

Mr. Davy, preferring some name founded upon one of its obvious and characteristic properties, proposes *chloric gas*, which does not imply any error, and would not require to be changed, even if it should hereafter be discovered to be a compound.

For expressing the compounds of this substance with other bodies, he is not disposed to employ the same term, but proposes adding to each base the terminal syllable *ine*, which is to imply the presence of the chloric base. Thus horn silver is to be called *argentine*; butter of antimony, *antimonine*, &c. He conceives also, that by means of vowels prefixed to the name, the proportion in which this body is combined with others may be conveniently expressed.

The Croonian Lecture. On some Physiological Researches, respecting the Influence of the Brain on the Action of the Heart, and on the Generation of animal Heat. By Mr. B. C. Brodie, F.R.S. Read December 20, 1810. [Phil. Trans. 1811, p. 36.]

It has been observed by Mr. Cruickshank, and the same observations have been made by M. Bichat (in his *Récherches Physiologiques sur la Vie et la Mort*), that the brain is not directly necessary to the action of the heart; and that when the functions of the brain are destroyed, the circulation of the blood ceases only in consequence of the suspension of the respiration.

The former of these observations Mr. Brodie had found to be correct; for if the spinal marrow were divided, though the respiration was thereby immediately stopped, still the heart continued to contract, and to propel forward, for a short time, dark-coloured blood; and even when the head was entirely removed, if the blood-vessels were secured by ligature, the circulation seemed unaffected by the entire separation. It appeared, therefore, in conformity to the second observation, to cease solely in consequence of the suspension of respiration; but Mr. Brodie conceived that this point might admit of direct proof by experiment; for in that case the heart should continue to act for a greater length of time, if the process of respiration were carried on artificially.

The present lecture comprises the details of his experiments on this subject.

The first experiment was made upon a rabbit, the head of which was removed after the blood-vessels had been tied up; and the lungs were then inflated artificially once in five seconds, during twenty-five minutes. The circulation of the blood was found to continue the whole of that time; but it was observed that no secretion of urine took place.

The second experiment was made upon a middle-sized dog, for the purpose of ascertaining also, whether the animal heat was kept up to its natural standard. At the end of two hours the pulse continued as high as seventy, but in the next half hour it was found to have declined rapidly, and the artificial respiration was discontinued. At the end of one hour a thermometer in the rectum had fallen 6°;

at the end of two hours it had fallen 14° in the thorax; and at the end of the experiment 20° in the thorax.

At the beginning of this experiment the ureters had been tied; and at the end of the experiment it was found that no urine was collected above the ligature.

The third experiment was made upon a rabbit; and the artificial respiration was continued one hour and forty minutes. A thermometer in the cavity of the abdomen fell in the first hour from 100° to 89° ; and in the next forty minutes to 85° ; but in the cavity of the thorax it was as low as 82° .

Since the blood in these experiments was observed to retain its florid red colour in the arteries, it might be expected, according to the common theory of animal heat, to retain also its proper temperature; but Mr. Brodie observes, that this must also depend on the fulness and frequency of the pulse, together with the fulness and frequency of inspiration. It therefore became necessary to attend particularly to these circumstances.

In the fourth experiment, which was also made upon a rabbit, the natural inspirations were imitated as nearly as possible; and at the end of forty minutes the pulse was found to continue as high as 140 in a minute, but the heat had declined from 99° to $92\frac{1}{2}^{\circ}$. At the end of one hour and twenty-five minutes, a thermometer in the pericardium was 85° , in the abdomen 87° .

In the fifth experiment the pulse continued at 140 for upwards of an hour, but the heat in the rectum declined from $101\frac{1}{2}^{\circ}$ to 92° .

In a subsequent experiment two rabbits were chosen, as nearly alike in size and every particular as possible. Both were killed; but one was suffered to cool gradually without interruption; and in the other the circulation was continued by means of artificial respiration.

At the beginning of the experiment the temperature of each was 99° .

At the end of half an hour that of the former was 99° ; the latter 97°		
Three quarters of an hour	98	95 $\frac{1}{2}$
One hour	96 $\frac{1}{2}$	94
One hour and a half	94	91

It appeared, therefore, that respiration tended rather to cool than to support the animal heat. But since it was possible that a small portion of heat might be generated, but counteracted by the contact of cold air, a subsequent experiment was made, in which the large vessels of the heart were tied, so as to prevent any circulation of the blood; and in this case the heat remained comparatively greater than in the former, as the cooling effect of the air was not diffused to distant parts of the body.

From the whole the author concludes,

1st. That the influence of the brain is not directly necessary to the action of the heart.

2nd. That the interruption of the circulation is owing to the stoppage of respiration.

3rd. That when the influence of the brain is cut off, the secretion of urine ceases, and the production of animal heat is discontinued, even though the blood is preserved of its florid red colour.

4th. That, on the contrary, the coldness of the air applied is communicated to the blood, and thereby diffused to distant parts of the body.

On the Expansion of any Functions of Multinomials. By Thomas Knight, Esq. Communicated by Humphry Davy, Esq. LL.D. Sec. R.S. Read June 7, 1810. [*Phil. Trans.* 1811, p. 49.]

As M. Arbogast is the only author who has cultivated this part of analysis with any great success, it appeared desirable to the author to take a different view of the same subject, in order to confirm Arbogast's results by a different mode of obtaining them.

His own method has also the further advantage of arriving at several new and remarkable theorems (particularly with respect to inverse derivation), which probably could not be found by the method of M. Arbogast.

As far as concerns the functions of a single multinomial, the rules are the same as those of Arbogast; but in the more difficult cases of double and triple multinomials and functions of any number of them, the methods of the author are professed to be new and expeditious; and they are demonstrated with a great degree of facility and simplicity, from the analogy which reigns throughout his manner of treating the subject, and which enables the reader more readily to retain the rules in his memory.

On a Case of nervous Affection cured by Pressure of the Carotids; with some physiological Remarks. By C. H. Parry, M.D. F.R.S. Read December 20, 1810. [*Phil. Trans.* 1811, p. 89.]

In the year 1788 Dr. Parry published, in the Memoirs of the Medical Society of London, an account of many symptoms, such as headache, vertigo, mania, dyspnœa, convulsions, and others usually denominated nervous, that had been removed by pressure on the carotid arteries, which the author conceives to have operated by diminishing a too violent impulse of blood into the vessels of the brain, and thereby obviating excessive irritation.

From various cases which have occurred to Dr. Parry since that period, he selects one which appears to him to afford a singular illustration of the principle. It is that of a lady, who, after having been exposed to severe cold for some time, was seized with numbness of the left side, succeeded by tingling of the left hand, and deafness of the left ear, succeeded by excessive sensibility to sound. These were followed by a feeling of contraction or stiffness of various muscles of that side, and subsequently flutterings and twitchings of the flexor muscles of the fore-arm and of the deltoid; not, however, so as to